



Solar Spinners for Your Windowsill!

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TOOLS:

- [1/16" drill bit \(1\)](#)
- [Dremel tool \(1\)](#)
- [Hot Glue gun & hot glue \(1\)](#)
- [Needle Nose Pliers \(1\)](#)
- [Soldering Iron and rosin core solder. \(1\)](#)
- [Wire cutter/stripper \(1\)](#)
- [bandsaw or hacksaw \(1\)](#)



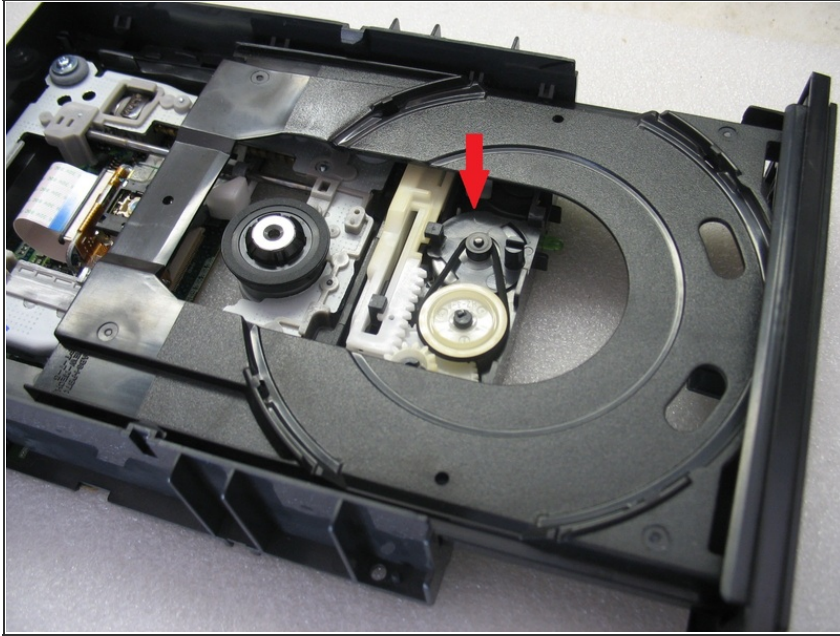
PARTS:

- [Solar cell, amorphous, 1½" x 1½, the kind found in solar garden lights \(1\)](#)
- [Compact CD, 3" diameter \(1\)](#)
- [Small motor from an old CDROM or DVDROM drive \(1\)](#)
- [1-Farad/5.5v capacitor \(1\)](#)
- [Nylon spacer, 7/16" OD x 1/4" ID x 7/16" L \(1\)](#)
- [1½" x 1½" square cut of 1/2" thick nylon cutting board, acrylic, or block of wood. Use 2" dia. if circular cut \(1\)](#)
- [Wire, 26 AWG red, 4"long \(1\)](#)
- [Wire, 26 AWG black, 4"long \(1\)](#)

SUMMARY

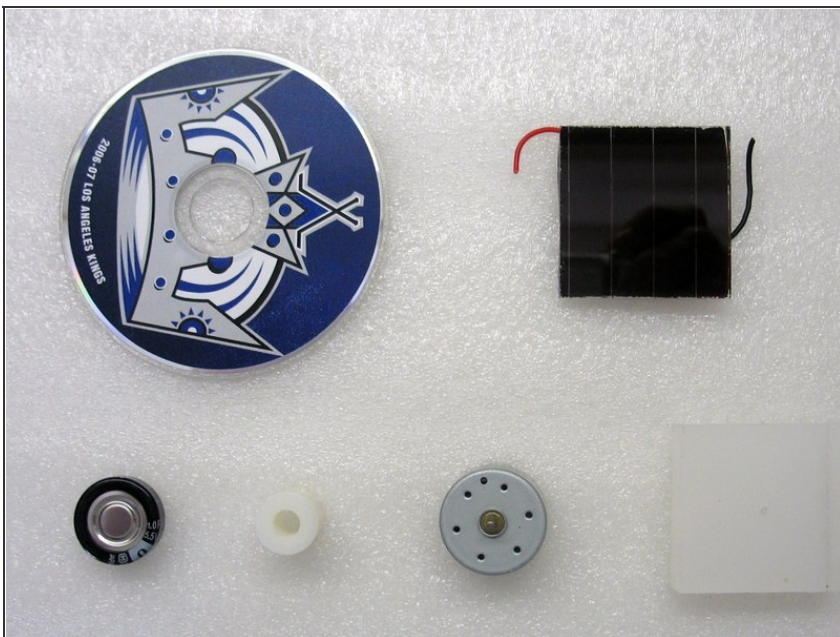
This is an easy-to-build simple solar engine, also known as a Trimmer. We will construct a direct-drive type (as opposed to a voltage-triggered) spinner that will really go nowhere fast in direct sunlight. Perfect for windowsills and desktops that get a lot of old Sol's rays. Many different styles are possible, but this is a straight-up basic spinner that never ceases to amuse.

Step 1 — Get the Motor



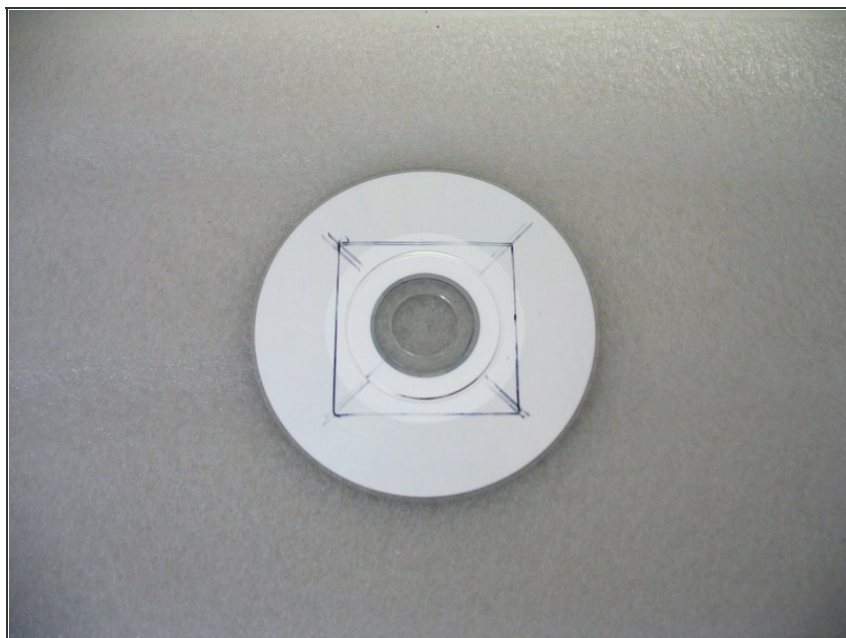
- Begin by obtaining a small motor, such as the one pictured here from an old CD ROM drive. They are usually soldered in place to a small board which is easily removable. Unsolder the motor from the board and discard the board.
- Other CD ROMs may have the motor held in place with small screws at the base of the motor. Remove the screws and then the motor.

Step 2 — Parts Needed



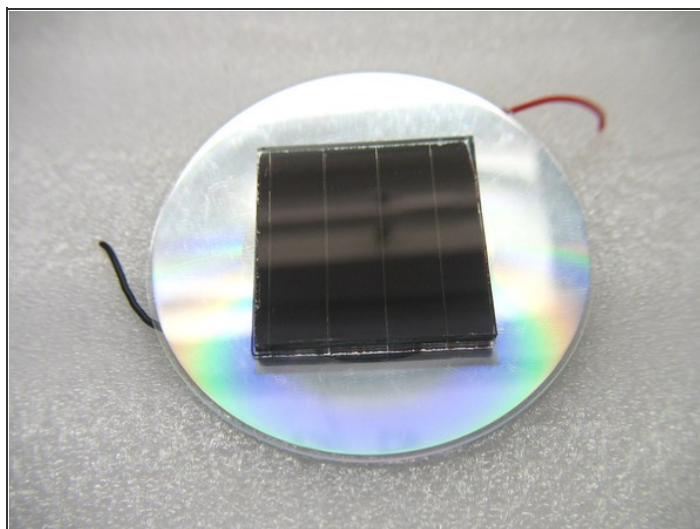
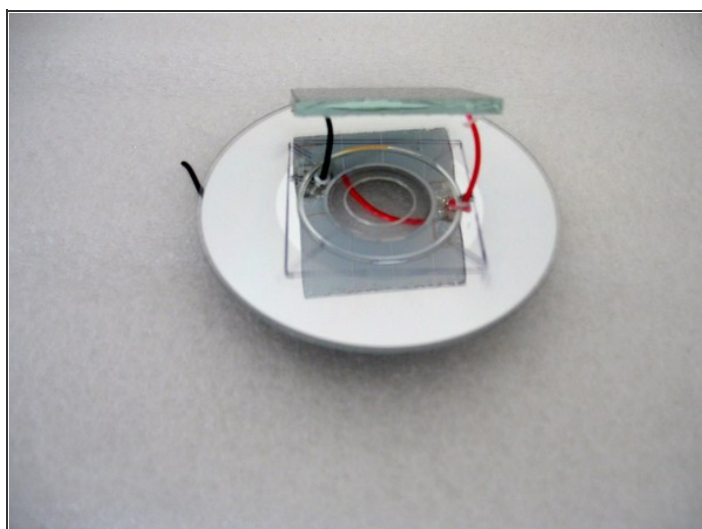
- Here are the parts needed for the spinner: compact CD, solar cell (removed from a garden pathway light), capacitor, spacer, motor, and base.
- If you ever want to up-size, use a standard size CD and additional solar cells wired in series. But we're going to keep it simple here to get the basics down pat.

Step 3 — Center and Attach the Cell



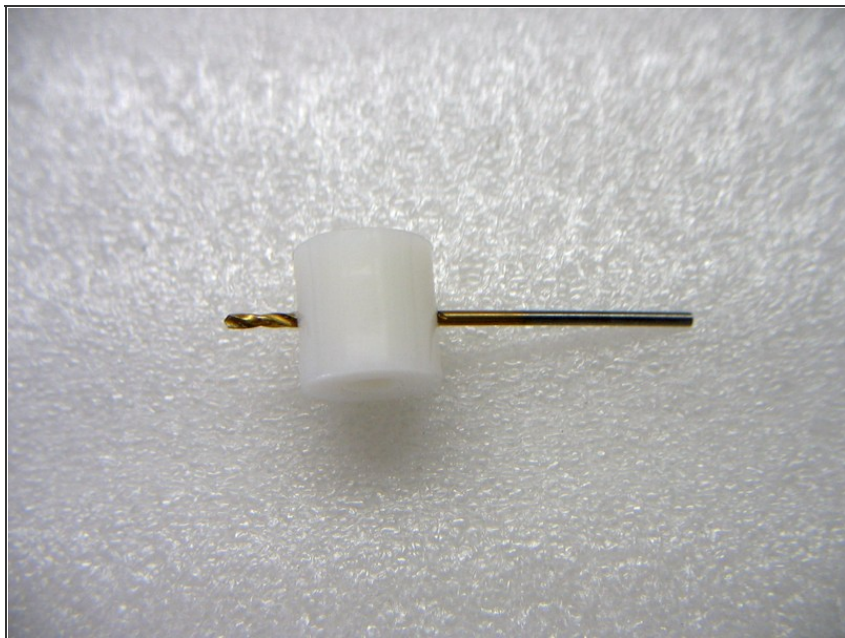
- It is important to keep in mind that all parts during the assembly should be centered and balanced around the vertical axis, or the spinner will wobble wildly once it gets going.
- Carefully center the solar cell over the CD and trace around the cell with a thin-tip marker. Mark where the wires will pass through and drill two 1/16" holes.

Step 4



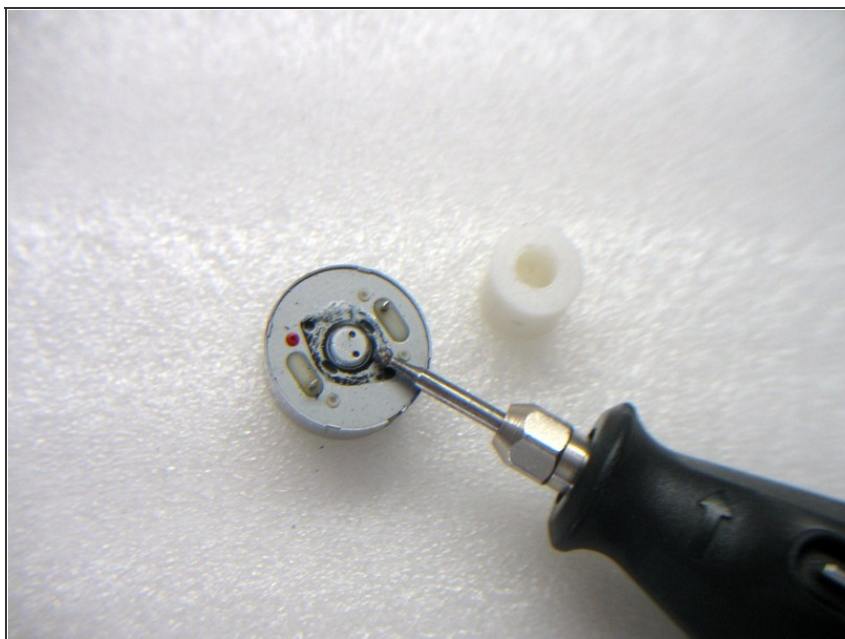
- Insert the cell wires through the holes. Apply a few globs of hot glue and gently press the solar cell down onto the CD, making sure it is centered in the box you traced.

Step 5 — Prep the Spacer



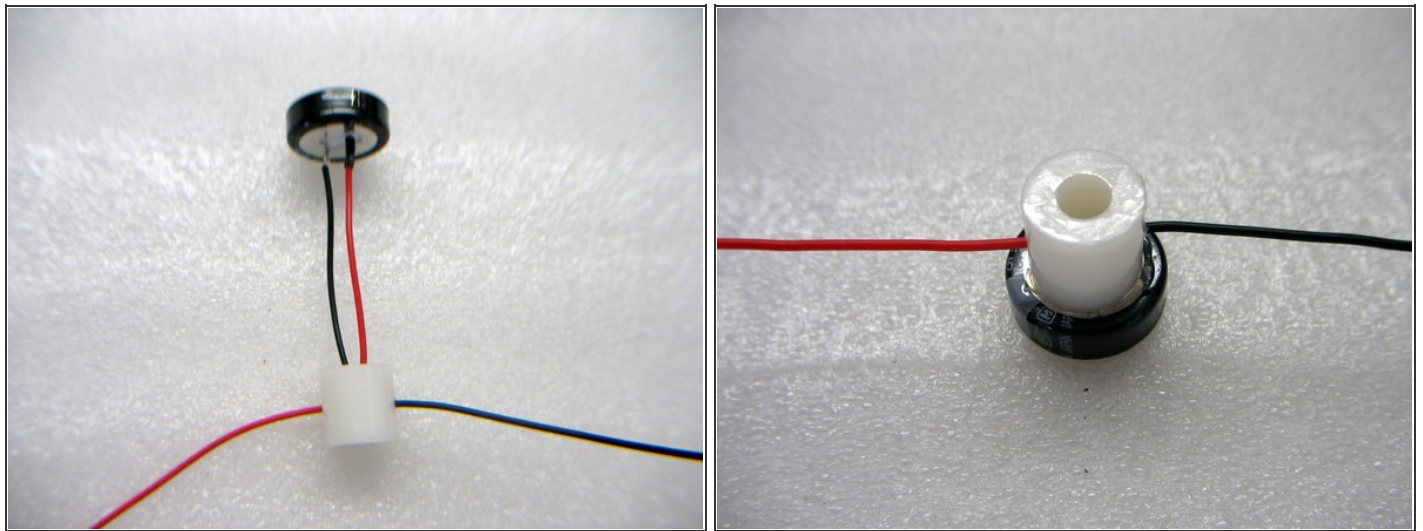
- Drill a 1/16" hole all the way through the nylon spacer from the side, about half way from one end.

Step 6 — Prep the Motor



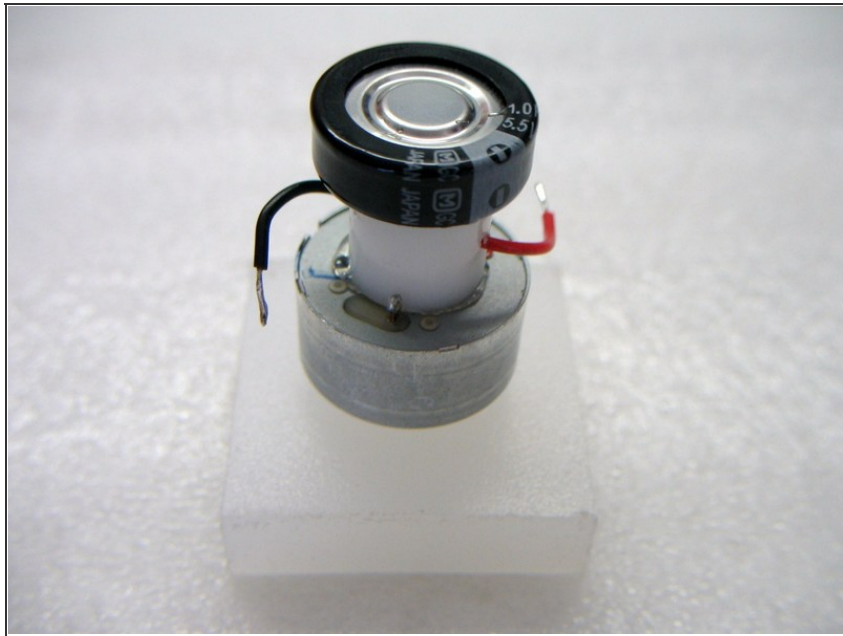
- Scuff up the base of the motor around the center and also on the end of the nylon spacer. This will give the glue good adhesion.

Step 7 — Wire up the Cap



- Feed the red and black wires through the spacer from the side and up through the center. Strip the ends and observing polarity, solder the red wire to the + (plus) terminal and the black wire to the - (minus) terminal of the capacitor.
- Pull the capacitor down to the spacer by pulling on the wires, then hot glue the spacer to the capacitor, taking care to make sure it is centered.
- The 1-farad capacitor will store the voltage generated by the solar cell while simultaneously powering the motor.

Step 8 — Mount the Motor



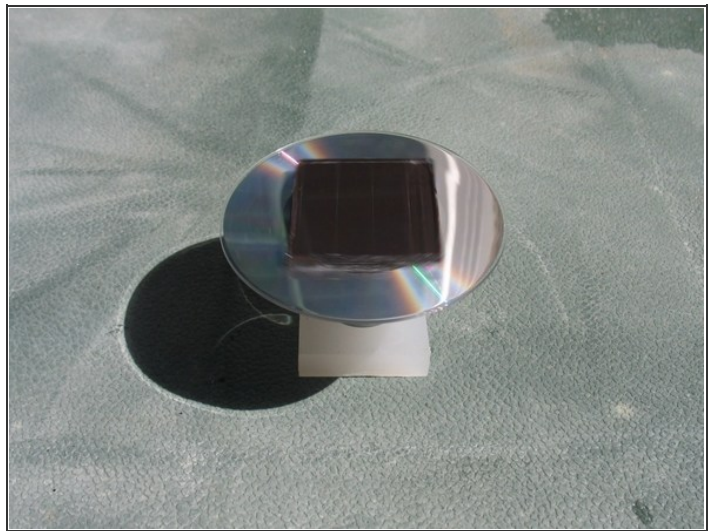
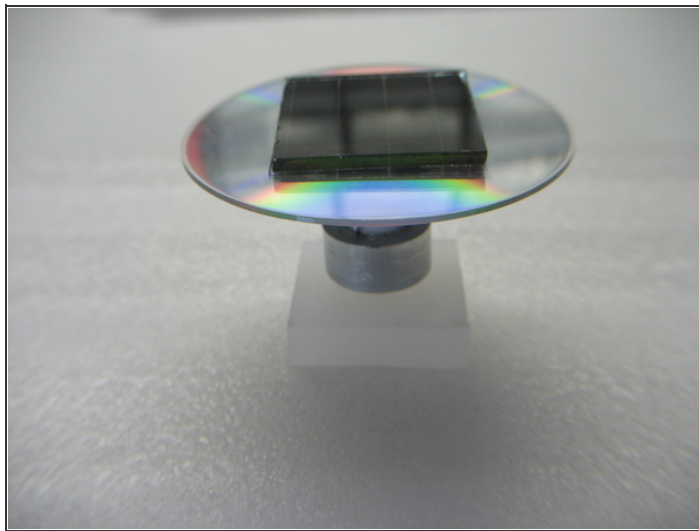
- Trim the wires to about 1" in length and strip off 1/4" of insulation. Tin the leads.
- Drill a 1/16" hole in the center of the cutting board base and push the motor spindle into the hole. If it won't fit, use a next-larger size drill. It must be a tight fit or the spinner won't spin!
- Now hot glue the other end of the spacer to the motor, making sure it is perfectly centered. If it sets tilted or off center, carefully heat up the glue with a heat gun until it melts, and reposition the spacer.

Step 9 — Final Assembly



- Remove the base and place the motor assembly upside down on the CD. Trim and strip the solar cell wires. Twist and solder the red wire to red capacitor wire, and the black to black capacitor wire. Then solder the wire bundles to the motor terminals.
- Now carefully center the motor assembly on the CD and hot-glue in place. It may help to trace around the capacitor and use this as a guide before gluing.

Step 10 — Spin!



- Mount the motor spindle to the base.
- Place in a sunny spot and spin away!
- If you've taken good care, the spinner will spin smoothly on its axis with minimum wobbling. If not, it will hop all over the place once it gets going...but who says you can't put a 'spin' on spin?

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